WJEC (Eduqas) Physics A Level

SP3.6a - Investigation of Radioactive Decay: A Dice Analogy

Practical Flashcards

What is meant by the random nature of radioactive decay?

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The random nature of radioactive decay means we cannot predict when the next decay will occur or which nuclei will decay.

What is radioactive half-life?

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The half-life of a sample of a radioactive isotope is the length of time it takes for the number of radioactive nuclei in the sample to halve. It is also the time it takes for the rate of decay or number of decay events per unit time to halve.

What should your graph of number of dice remaining against number of throws look like?

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The graph should show an exponential decay curve. The half-life of this decay should be around 3.8 throws.

How can the half-life be determined from your graph?

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The half-life is given by reading off the number of throws at the point where the number of dice remaining is half the original value.

How does the half-life of a radioactive isotope vary with time?

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The half-life of a radioactive isotope in a sample does not vary with time. It is a quantity that remains constant.

How can you use your graph to confirm that the half-life is constant?

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If a sufficiently large number of dice have been used, the time taken for the original number to halve should equal the time taken for the number of dice to drop from half their original number, to a quarter. If this is the case, the half-life is constant.